PAST AND RECENT TRENDS IN THE EXPLOITATION OF THE GREAT LAKES FISHERIES OF UGANDA

by

F.L. Orach-Meza[1], E.J. Coenen[2], & J.E. Reynolds[3]

ABSTRACT

Uganda's fish production has shown a substantial increase from a level of 61,500 tonnes in 1961 to a total of 214,302 tonnes in 1988. During this period significant changes also occurred in species composition, fishing factors, and patterns of utilisation. This paper briefly summarises the fisheries of Uganda's great lakes and reviews past and present trends in their exploitation, as reflected in available catch and effort data collected through the Fisheries Department statistical reporting system.

INTRODUCTION

A review of the publications concerning the fisheries of the Ugandan waters of Lakes Victoria, Albert and Edward reveals that records of catches of commercial species of fish go back for many years, though are unfortunately incomplete in places. Limited funds and, more recently, civil instabilities, have prevented the sustained collection of detailed catch and effort statistics. Catches of different species have varied with time due to factors associated with changing fishing habits and equipment, fishing pressure, introductions of exotic stock such as Nile perch and Nile tilapia, consumer demands patterns for fish, and with some yet-to-be-explained environmental variables. Prior to 1910, fishing in Uganda's waters was limited to subsistence methods using traps, baskets, spears, and traditional netting materials (Graham 1929; Balarin 1985). The subsequent introduction of netting materials made of cotton and flax stimulated the development of a commercial fishery, most notably for tilapia in Lake Victoria.

[1] Deputy Commissioner of Fisheries & UGA/87/007 National Project Director, Fisheries Dept., P.O. Box 4, Entebbe, Uganda (Equal Co-Author).

[2] Fisheries Biologist & CTA, UGA/87/007, FAO/UN, P.O. Box 521, Kampala, Uganda (Equal Co-Author).

[3] Socio-Economist, UGA/87/007, FAO/UN, P.O. Box 521, Kampala, Uganda (Equal Co-Author).

The first documented fisheries surveys were carried out separately by Graham and Worthington between 1927 and 1931. Graham recommended, *inter alla*, the establishment of a management Authority for Lake Victoria, whose remit would combine both administration and research, including the collection of statistics. Between 1947 and 1960, such a role was played jointly or individually by the Lake Victoria Fisheries Service, Uganda Game Department, East African Freshwater Fisheries Research Organization, and the Uganda Game and Fisheries Department. The Uganda Fisheries Department (UFD), created in 1961, eventually became the sole agency responsible for the collection of fisheries statistics in Uganda.

Studies by Sastry (1957), Garrod (1960), Stoneman (1969), Walker (1971), Wetherall (1974), Orach-Meza (1986), and Bernaseck (1987) revealed the weaknesses of the statistical system being employed and in each case recommended an improved method. However, the series of disruptions that struck Uganda in the 1970's and continued until the mid-1980's severely curtailed operations of the existing systems, and certainly precluded efforts to upgrade it. With the recent commencement of the FAO/UNDP Fisheries Statistics and Information Systems Project (FISHIN - UGA/87/007), an attempt is now being mounted to revitalise the system and put it on a sound and permanent footing (FISHIN Project BIOSTAT Reports 1989).

The present paper is based in part on some of the preliminary work carried out under the FISHIN project. Summary descriptions of Uganda's great lakes fisheries are given, and changing trends in yields, fishing effort, and utilisation patterns are briefly reviewed.

THE FISHERIES OF UGANDA'S GREAT LAKES

Although a landlocked country, Uganda is generally well endowed with freshwater lakes, rivers, swamps, and man-made dams, valley tanks, and fish ponds. These waters together occupy about 42,000 km^2 or some 17% of Uganda's total area. There are on record 165 lakes of varying dimensions in the country.

Virtually all the water bodies are rich in fish but the main production comes from Lakes Victoria, Kyoga, Albert, George, Edward, and Wamala, as well as the River Nile. Gill netting, beach seining, and longlining have become the dominant methods of fishing in all these swamps, and a fair amount of subsistence rod-and-line fishing is also practised. Past studies have reported 92 different species of fish in Uganda waters. These fall into 41 generic groups, 17 families, and 3 sub-classes (Greenwood 1966). More recent work has shown that the haplochromine complex includes many more species than previously recorded. It is now reckoned that over 200 haplochromine species occur in the various waters of the country (Basasibwaki 1989, pers. comm.: Witte and Van Oijen 1988).

The most significant commercial fishery is on Lake Victoria, some 45% of which lies within Uganda territory (Welcomme, 1972). The second largest freshwater lake in the world, Victoria occupies a wide but relatively shallow basin. Its physical and biological characteristics are similar in certain respects to those of Lake Kyoga, a much smaller but still extensive complex of flooded river valleys situated a little further down the course of the Nile. Lake Albert lies in the western Rift Valley and straddles the boundary between Uganda and Zaire; it is a deeper basin lake and shares some features in common with other major Rift waters. Lake Edward, in the southwest corner of Uganda, also lies in the Rift Valley and is also shared with Zaire. It is connected via the 23 km long Kazinga Channel to Lake George, a very shallow water body which lies wholly within Uganda and is known for its exceptionally high productivity, on the order of 250 kg of fish per hectare per year (Dunn *et al.* 1969). Other minor waters account for only a small fraction of Uganda's total annual catch, but are nevertheless locally important sources of food and, therefore, valuable components of the national fishery.

The main species of commercial importance are those of the genera of *Lates*, *Oreochromis*, *Tilapia*, *Bagrus*, *Clarias*, *Protopterus*, *Alestes*, *Hydrocynus*, *Haplochromis*, *Synodontis*, *Distichodus*, *Barbus*, *Labeo*, *Mormyrus*, *Rastrineobola*, *Auchenoglanis* and *Schilbe*. While some of these species exhibit features which are of considerable interest to the biologist, commercial exploitation activities primarily involve only seven of the above genera (Tables 1, 2, and 3).

Fishing consitutes an extremely important rural industry in Uganda. It is reckoned that some 75,000 nationals are directly employed in the sector as fishing operators, and that there are several times more people employed in various related activities such as processing, trading, boatbuilding, net-making, etc. After a period of retrenchment in the industry brought on by the civil unrest of the late 1970's-early 1980's, the national fishery is showing signs of vigorous growth. It is estimated that the total number of canoes rose to 16,000 by 1988. The vast majority of canoes are of the planked variety, with dug-outs comprising only about 8% of the total. The level of motorisation shows a gradual increase, and an estimated 3000 units are now equipped with outboards (UFD 1988).

There has been a marked rise in fish consumption per capita within Uganda in recent years. It is now thought likely that fish contribute more than 50% of the total animal protein intake for the national population, with average per capita consumption estimated at about 13 kg per year. This change may be attributed to the interaction of various factors, including the disruption in beef and other meat supplies which followed the breakdown in infrastructure and administration and management services during the earlier period of turmoil experienced in the country. But the factors which are of perhaps greatest significance are those related to the transformation of species composition in the Lake Victoria catches over the past ten years or so (Reynolds and Greboval 1988).

The dramatic upsurge of Nile perch has led to a far greater availability of fish not only for urban dwellers in the principal cities and towns, but for the national population as a whole. The effect has been particularly notable in the southern portion of the country, where most people reside. Recent field observations gathered in the course of FISHIN Project Work confirm that there are extensive regions remote from Lake Victoria where fish consumption, previously of negligible proportions, has now assumed an overriding significance in the nutritional budget of rural folk. Within urban areas and particularly Kampala, formal and informal trade in Nile perch has proliferated to such a degree as to make *mputa*, as it is popularly known, virtually ubiquitous. A considerable export trade in fresh and processed Nile perch products to neighbouring and overseas countries has also developed within the last several years, bringing benefits in terms of foreign exchange and barter trade earnings (FISHIN Project Socio-Economic Field Reports (1989).

Due to the tropical temperatures and conditions prevailing in Uganda, fresh fish is normally sold and consumed within a radius of 50 km or so around the various landing centres. The bulk of the national catch is processed in some form, whether sun-dried, salted, smoked, or fired. In this fashion, fish products reach consumers many hundreds of kilometres from production centres. Hot-smoked fish are the most popular with the consumer and the most valuable to the processor, but this method of preparation is limited by the availability of firewood. A small but growing supply of fresh and frozen Nile perch fillets has developed with the establishment of processing centres to serve premium urban markets. However, the principal consumers of Nile perch are the ordinary folk of the towns and countryside, who welcome the new abundance of these fish and the affordable and palatable food they provide (Reynolds and Greboval 1988).

TRENDS IN YIELDS

Tables 1 to 3 provide time series data on principal species in commercial catches during the last twenty-five years (1963-1988) for Lakes Victoria, Albert and George/Edward. Figure 1 illustrates changes in the total catch of fish from all water bodies in Uganda between 1961 and 1988. Figures 2 to 6 show the percentage composition of principal species in the catches of the above major lakes for the same period. The data used are summarised from official Government publications of catch statistics collected by Fisheries Department Field staff. It should be stressed, however, that the interpretation of this statistical record must be mounted with caution, given that there is room for considerable further improvement in the monitoring and reporting system.

With due regard for their shortcoming, these data nevertheless depict a picture of substantial changes in the catches for each of the lakes covered. Total annual catch peaked in 1978 at 223,300 tonnes and now (1988) stands at 214,000 tonnes, from a base of 61,500 tonnes recorded in 1961 (Figure 1). Records of fishing effort in terms of active canoes (UFD 1988) indicate that there were only 5,900 craft in use in 1961, of which 1,450 were fitted with outboard engines. The number of canoes now totals 16,000.

Increased fishing effort, together with the introduction of exotic fast-growing species into Lakes Victoria, Kyoga, George, and Edward, obviously contributed to the rapid rise in catches.

Effort exerted on fish stocks remained high (over 13,000 canoes) throughout the period of peak catches in the 1970's. The subsequent decline in catches can be associated with inadequate supply of fishing gear such as gill nets and hooks in the country, as well as with civil strife in the fishing zones. From the early 1980s, marked changes in the species composition of catches were also becoming apparent, especially with regard to the proliferation of the introduced Nile perch in Lake Victoria (Acere 1986; Reynolds and Greboval 1988).

It is shown that in Lake Victoria (Figure 2), a substantial drop in catches of tilapia species occurred in the mid-1960's: this was offset by increases in the catches of other species, however. The overall trend peaked in 1969, then total catches reached 46,273 tonnes, but then gradually reversed itself, with total catches falling to a low of about 10,000 tonnes in 1980 (Tabel 1). Thereafter, with soaring catches of Nile perch from less than a 1,000 tonnes in 1981 to a high point of 92,000 tonnes in 1988, total yields not only recovered but attained dramatic and unprecedented levels. Whilst Nile perch catches have been the most spectacular feature of the overall situation, an appreciable upward momentum in tilapia catches (comprised mainly of *Oreochromis*) has also become apparent in the last several years. In 1988, Nile perch and tilapia together accounted for 97% of the total Lake Victoria catch.

Although not directly a topic of this paper, it should be mentioned that the Kyoga fisheries have recently shown a marked decline in annual total yields from the range of 100,000 - 167,000 tonnes being reported during the period 1973 - 1982. The catches at that time were composed almost equally of Nile perch and Nile tilapia. From around 1983, a dramatic reversal of catch trends occurred as the combined result of several factors. Beginning in the mid-1970's, severe fishing input shortages developed in the country, and Kyoga operators resorted increasingly to the use of destructrive fishing practices and illegal gear. By the early 1980's the effects of these developments were becoming apparent particularly in the case of Nile perch. Catch tonnages fell off quite sharply, and catch composition showed increasing proportions of smaller fish. Although recent input supply schemes have resulted in a greater availability of gear, there is still not an adequate number of large mesh nets for catching bigger *Lates*. Finally, two other important factors must be taken into account. First, the Kyoga fisheries have been heavily affected by a steady decline in water level over the last decade, due to prevailing climatic conditions. This drop, amounting to about 1.5 meters, has caused a reduction in breeding and nursery areas, thus diminishing the productivity of the lake.

Second, large sections of the Kyoga complex have for some time not been open to normal fishing exploitation because of insecurity problems. Certain fishing grounds and landing sites have, therefore, not been contributing their usual share to overall catch levels. A total catch of about 68,000 tonnes was estimated for Lake Kyoga in 1988.

For Lake Albert, the data suggest that the role of *Alestes* in the fishery has declined very sharply. The catches of these fish dropped from a high of over 13,000 tonnes to a very low level of 2,000 tonnes within a twenty year period (Table 2). By 1988 only 500 tonnes were recorded. The *Alestes* declines coincides with rises in the catches of *Lates*, *Oreochromis*, *Tilapia*, *Bagrus*, and *Hydrocynus*. These increases stabilised in 1972 and 1973. It was not until 1983 that the catches went down quite drastically, with total yields dropping to a mere 2,300 tonnes in 1985. Catches of Nile tilapia, *Hydrocynus* and *Lates* have, however, shown adequate recovery since that time. By 1988 total catches had increased once again to 12,532 tonnes, which is more than half the highest catch of 24,181 tonnes recorded in 1970.

Commercial catches in Lakes Edward and George have declined gradually from 13,000 tonnes in 1968 to a low figure of around 6,000 tonnes in 1988 (Table 3). Percentage composition of *Bagrus*, *Barbus*, *Clarius*, and *Protopterus* remained relatively constant from 1963 up to 1982. Catches of *Bagrus* and *Protopterus* then picked up in 1983, coinciding with continuing low returns for the popular Nile tilapia. This trend may be attributed to the effect of increased fishing effort over and above the legally permitted level of 480 canoes for the entire Edward/George complex. Recent aerial survey findings reveal that there are now some 900 canoes operating in the fishery (Dunn 1989).

CONCLUSION

The overall upward trend in yield over time which can be documented through available Fishery Department statistical records has resulted from a complex interaction between aquatic environmental factors affecting the relative abundance of fishable stock, and changes in fishing effort associated with socio-economic factors. Both sets of influences are integral to the country's fishery production process (Orach-Meza 1978).

As in all natural resource exploitation systems, there is an upper limit to the productivity of Uganda's fishery. Some observers now reckon that this limit may lie in the neighbourhood of 300,000 tonnes per year, a level that might be achieved without risk to the continued viability of the resource base. The present estimated national production of 214,000 tonnes is still well below this projected amount, though at the same time it represents a dramatic improvement on the some 60,000 tonnes which were being produced thirty years ago. In any event, closer study of the trends in each water body is advised before any new major investments are made to increase fish production even further.

Much of the heightened production now being realised from the national fishery owes to the upsurge in Nile perch catches in Lake Victoria. The introduction of *Lates* and its real and supposed impacts on the ecology and fishery of the Lake have occasioned a great deal of adverse critisism and expressions of alarm in certain quarters (e.g. Barel *et al.* 1985; Balon and Bruton 1986). Whilst the presence of Nile perch has undoubtedly had profounds effects on the aquatic environment, declines in the abundance of certain other species cannot necesarily be attributed solely nor even primarily to its predatory habits.

The consistent heavy fishing pressure on favoured species and the use of destructive gear and methods over the years must also be taken into account in explaining changes in species composition of the catches (Acere 1986). Furthermore, the wholesale censure of *Lates* does not appear to be justified in light of the tremendous nutritional and economic advantages it has brought to both fisherfolk and wider regional populations (Reynolds and Greboval 1988).

Future production from Uganda national waters will also depend on new or expanded exploitation of other resources. Offshore species of fish such as *Rastrineobola* in Lakes Victoria, Kyoga, and Albert remain largely untapped, as do other aquatic resources like freshwater crustacea, molluscs, and edible water weeds (MAIF 1984). In addition, little has been made thus far of the stocks of fish in the Victoria Nile, Albert Nile, and the numerous dams, swamps, and valley tanks throughout the country. Prospects for increasing fish production through the expansion of fish farming activities are quite considerable as well.

REFERENCES

Acere, T.O., 1986. Nile perch, *Lates niloticus* (Linne; the scapegoat for the decline/disappearance of the indigenous fish species of Lake Victoria. Paper presented at the UFFRO seminar on the Current State and Planned Development Strategies of the Fisheries of Lakes Victoria and Kyoga. Jinja, October 1986: 37 p. (mimeo).

Anonymus, 1986. Statistical sampling method for improving the catch assessment of lake fisheries. Paper presented at the UFFRO Seminar on the Current State and Planned Development Strategies of the fisheries of Lakes Victoria and Kyoga. Jinja, October 1986: 21 p. (mimeo).

Anonymus, 1989. Socio-Economic (SEC) Field Reports, FAO/UNDP Project UGA/97/007, (mimeo).

Balarin, J.D., 1985. National review for agriculture development in Africa. 10. Uganda. FAO Fish. Circ., (770.10: 109 p.

Balon, E.K. and M.N. Bruton, 1986. Introduction of alien species or why scientific advice is not needed. Environ. Biol. Fishes 16:225-30.

Barel, C.D.N., et al., 1985. Destruction of fisheries in Africa's lakes. Nature, Lond., 315(6014):19-20.

Basasibwaki, P. (Fisheries Biologist, Uganda Freshwater Fisheries Research Organisation), 1989. Personal communication.

Bernacsek, G.M., 1987. Kenya, Tanzania, and Uganda: evaluation of statistical services of Lake Victoria fisheries. Mission report. Accra, Ghana, FAO, Regional Office for Africa, Committee for Inland Fisheries of Africa, Sub-Committee for the Development and Management of the Fisheries of Lake Victoria, (mimeo).

Dunn, I.G., 1989. Fisheries management study in the Queen Elizabeth National Park. Mission report for EEC Project No. 4100.037.42.44, Conservation of Natural Resources. Rome, AGRICONSULTING: 35 p.

Dunn, I.G., M.J. Burgis, G.G. Ganf, L.M. Gowan, & A.B. Viner, 1969. Lake George, Uganda: a limnological survey. Verh. Internat. Verein. Limnol., (17): 284-288.

FISHIN (Fisheries Statistics and Information Systems), 1989. Bio-Statistical (BIOSTAT) Reports, FAO/UNDP Project UGA/87/007, (mimeo).

Garrod, D.J., 1960. Fish population studies on Lake Victoria. Annu. Rep. E. Afr. Freshwat. Fish. Res. Org., Appendix A:12-17.

Graham, M., 1929. The Victoria Nyanza and its fisheries. London, Crown Agenst for the Colonies, 255 p.

Greenwood, P.H., 1966. The fishes of Uganda (2nd Revised Ed.). Kampala, The Uganda Society, 131 p.

MAIF, (Ministry of Animal Industry and Fisheries, Uganda), 1984. Blueprint for fisheries development in Uganda. Kamapala, MAIF: 25 p.

Orach-Meza, F.L., 1978. Functional dependence of fish yields on several components of bioeconomic variables. Ann Arbor, Mich., University Microfilms (Ph. D Dissertation).

Reynolds, J.E. and D.F. Greboval, 1988. Socio-economic effects of the evolution of Nile perch fisheries in Lake Victoria: a review. CIFA Techn. Pap., (17):148 p.

Sastry, K.V.R., 1957. Interim report to the Government of Uganda on improvement of fisheries statistics. Rome, FAO, Report FAO/58/1/188: 91 p.

Stoneman, J., 1969. Fisheries catch statistics. Uganda Fish. Dept. Occ. Pap., No. 2: 25 - 27.

Twongo, T., 1988. Recent trends in the history of Lake Kioga - Uganda. In D. Lewis (ed.), Predator-prey relationships, population dynamcis, and fisheries productivities of large African lakes. CIFA Occ. Pap., (15): 140-51.

UFD (Uganda Fisheries Department), 1988. Annual Report.

Walker, R.S., 1971. On the methodology of statistical surveys to be carried out on Lake Victoria in Kenya, Tanzania, and Uganda. Entebbe, Uganda Fisheries Dept., (mimeo).

Welcomme, R.L., 1972. The inland waters of Africa. Les eaux interieures d'Afrique. CIFA Techn. Pap./Doc. Tech. OPCA, (1): 117 p.

Wetherall, J.A., 1974. On the Catch Assessment Survey (CAS) of Lake Victoria. EAFFRO Occ. Pap., No. 14: 58 p.

Witte, F., and M.J.P. van Oijen, 1989. Taxonomy, ecology, and fishery of haplochromine trophic groups. In HEST, 1989. Fish stocks and fisheries in Lake Victoria. A handbook to the HEST/TAFARI & FAO/DANIDA regional seminar. Mwanza, January/February 1989. Report of the Haplochromis Ecology Survey Team (HAST) and the Tanzanian Fisheries Research Institute (TAFARI) No. 53. Leiden, The Netherlands.

Table 1 Evolution of the catch (in tonnes) for Lake Victoria (Uganda) 1965-1988

Year	Lates	Tilapia	Bagrus	Barbus	Prot.	Clar.	Synod.	Hapl.	Alest.	Labeo	Haem.	Rastr.	Others	Total
1965	3	20,965	1,035	660	544	626	2				496			24,304
1956	6	20,010	2,730	967	857	1,731		651	6		513			26,020
1967	3	14,663	10,552	1,026	4,266	2,742	243	3,666	440	407	457		62	38,180
1968	3	6,376	6,071	1,140	18,012	3,016	16	7,864			74			40,506
1966	600	16,644	7,530	1,735	5,074	5,233	511	2,266	142	204	1,709		113	46,273
1970	620	17,760	11,146	430	6,990	2,310	220	1,100					160	41,736
1971	726	14,190	11,266	636	6,166	2,346	400	1,050	1	105	1,000			36,809
1972	640	10,060	11,020	901	5,636	3,322	556	1,656		166	666		3	36,301
1973	676	7,490	10,366	640	6,500	3,110	476	1,646		246	650			33,501
1974	1,066	6,463	6,667	660	3,306	2,737	160	1,760		66	250	15		29,501
1975	250	7,000	2,930	360	166	1,290	70	1,690		10	40	10		13,745
1976	540	1,650	4,360	130	1,600	1,320	40	1,000		10	20	10		11,100
1977	460	3,110	4,510	530	2,270	1,620	570	1,560		30	240			15,600
1978	460	3,110	4,900	530	2,300	1,900	540	1,560		30	240			15,570
1979	190	1,650	6,530	360	1,370	2,330	2,540	1,550		40	130	70		18,780
1980	120	2,302	3,045	62	365	2,378	735	63			62			8,999
1981	765	6,170	2,077	61	2,765	2,210	643	67			72			17,000
1982	1,847	460	3,907		5,456	265	660	73						12,000
1983	13,960	362	2,141	56	61	161	110	61			40			17,004
1984	26,027	2,276	17,033	56	106	237	521				26			44,782
1985	37,369	1,266	16,017	10	71	572	223			6	25			54,578
1986	41,000	5,750	8,266	104	263	126					289			56,026
1987	76,617	5,764	7,056	66	554	1,165	56	6		2	13	2,001	14	83,164
1988	82,031	11,570	206	30	315	426	6	416		3	22	2,023	30	107,081

Table 2 Evolution of the catch (in tonnes) for Lake Albert (Uganda) 1963-1988

Year	Lates	Tilapia	Bagrus	Alest.	Hydr.	Clar.	Synod.	Barbus	Clar.	Prot.	Labeo	Haem.	Auch.	Sch.	Total
1963	343	235	17	8,186	271	2,283	13	7	17	19	31	10	9		12,349
1964															10,204
1965	1,515	153	90	8,416	242	466	150	27	110	6	124	12	6		12,420
1966	1,665	96	39	8,553	756	936	341	22	101	2	26	20	16		13,600
1967															13,186
1968															13,490
1969	1,667	324	22	8,595	1,031	22	271	25	66		26	15	2		10,380
1970	2,360	1,030	160	13,110	5,500		660	70	70	1					24,161
1971	1,075	946	111	4,651	2,635		46								9,500
1972	2,203	1,064	156	3,163	3,193	96	341	22	1	3	96	46	24		10,540
1973	3,652	1,466	442	3,130	4,210										12,699
1974	3,607	2,076	717	2,236	4,364	232	60		14	10	60	196	124	76	13,756
1975	5,143	3,002	116	3,124	5,246	176	70	67	216	52	106	106	117		17,666
1976	2,696	1,726	560	2,026	4,696	111			170	50	40	26			12,300
1977	4,300	1,676	1,400	2,230	5,440					60	10				15,300
1976	4,300	1,900	1,400	2,200	5,400					60	10				15,270
1979	5,265	2,064	1,302	2,207	4,566						56				14,410
1960	1,202	2,265	2,064	2,207	4,566					122	56				13,532
1961	2,631	2,366	1,300	2,411	2,037	215			177	213	33				11,215
1962	2,414	1,564	160	2,307	2,126	296	215		157	171	55	45	50	14	10,000
1963	1,345	1,142	614	625	1,735	20	64	31	264	666	62	2	46	10	6,695
1964	1,267	1,627	326	366	677	4	120	122	264	664	62	2	35	9	5,950
1965	245	1,056	265	163	7		16	144	172	116	13	1			2,300
1966	1,017	666	254	576	1,570	4	117		116	77	77	5	1	99	4,914
1967	1,533	3,046	664	426	1,536	13	302	277	221	265	64	6	106	5	5,900
1966	3,596	3,656	740	476	3,536	213	276	132	313	364	112	264	5	10	12,532

Table 3 Evolution of the catches (tonnes) for Lakes George/Edward 1963-1988

Year	Tilapia	Bagrus	Barbus	Clarias	Protop.	Labeo	Mormyr.	Total
1963	8,705	1,540	238	186	352			12,021
1964								10,232
1965	8,614	1,660	251	266	465	3	16	12,576
1966	8,716	1,445	106	163	443	2	7	10,880
1967	10,842	1,300	210	146	416	2	6	12,824
1968								13,000
1969	9,330	1,368	211	284	800		3	11,817
1970	7,980	1,380	180	320	900			10,470
1971	8,878	1,581	260	280	888		2	11,700
1972	9,058	1,624	302	387	728	1	2	12,301
1973	8,220	1,648	227	330	574			11,000
1974	7,192	1,912	406	382	708			10,500
1975	8,548	2,305	412	858	1,257			13,182
1976	8,400	2,390	410	490	810			12,470
1977	7,912	2,980	328	540	900			12,180
1978	8,605	2,500	275	820	900			11,800
1979	5,260	1,867	227	1,103	1,064			9,821
1980	3,740	1,472	175	907	705	3	2	6,705
1981	2,305	810	155	440	690			4,400
1982	3,178	965	65	145	275	0	1	4,835
1983	3,065	2,123	189	202	487	0	1	6,040
1984								6,000
1985	1,815	3,278	141	157	952	9	1	8,025
1986	2,185	2,773	174	232	910	1	1	8,287
1987	1,864	2,944	87	394	1,201	1	1	8,212
1988	2,243	1,728	76	386	1,504		1	5,938

Figure 1. Total Annual Catch (Uganda) (Source: MAIF, Fish. Dept.)

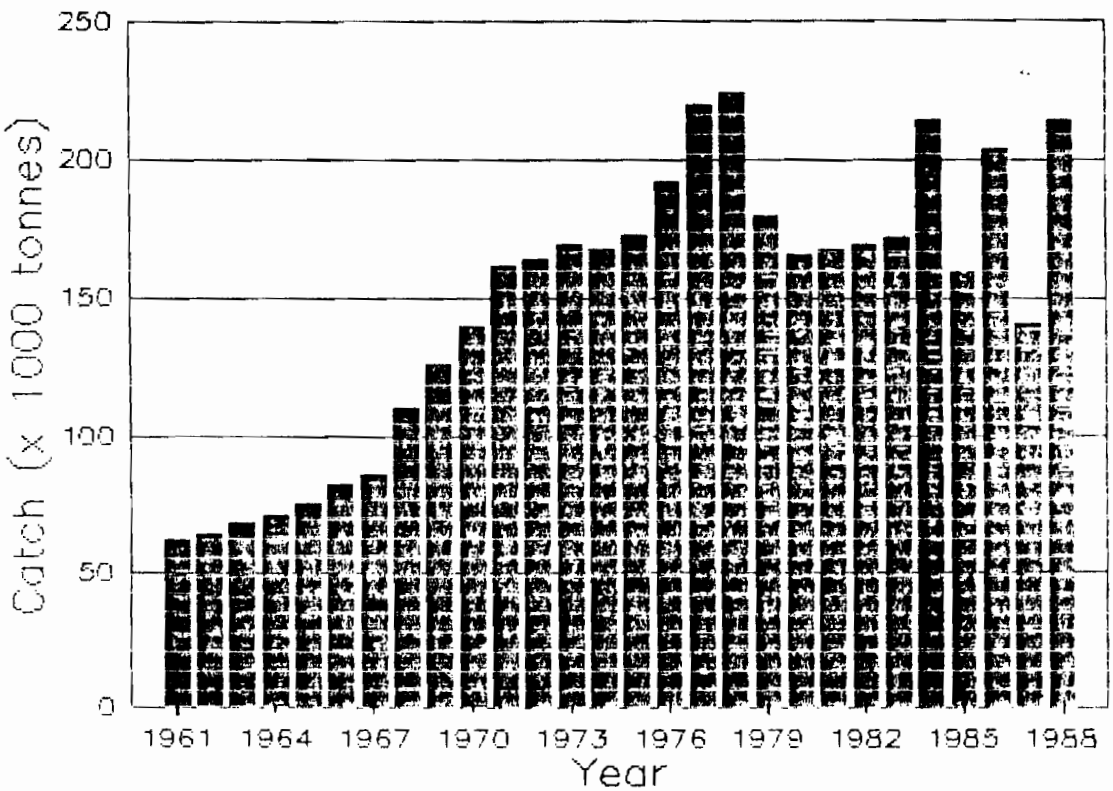

Figure 2. Percentage Weight distribution of Lates, Tilapia and Bagrus in Lake Victoria catches (1965-1988)

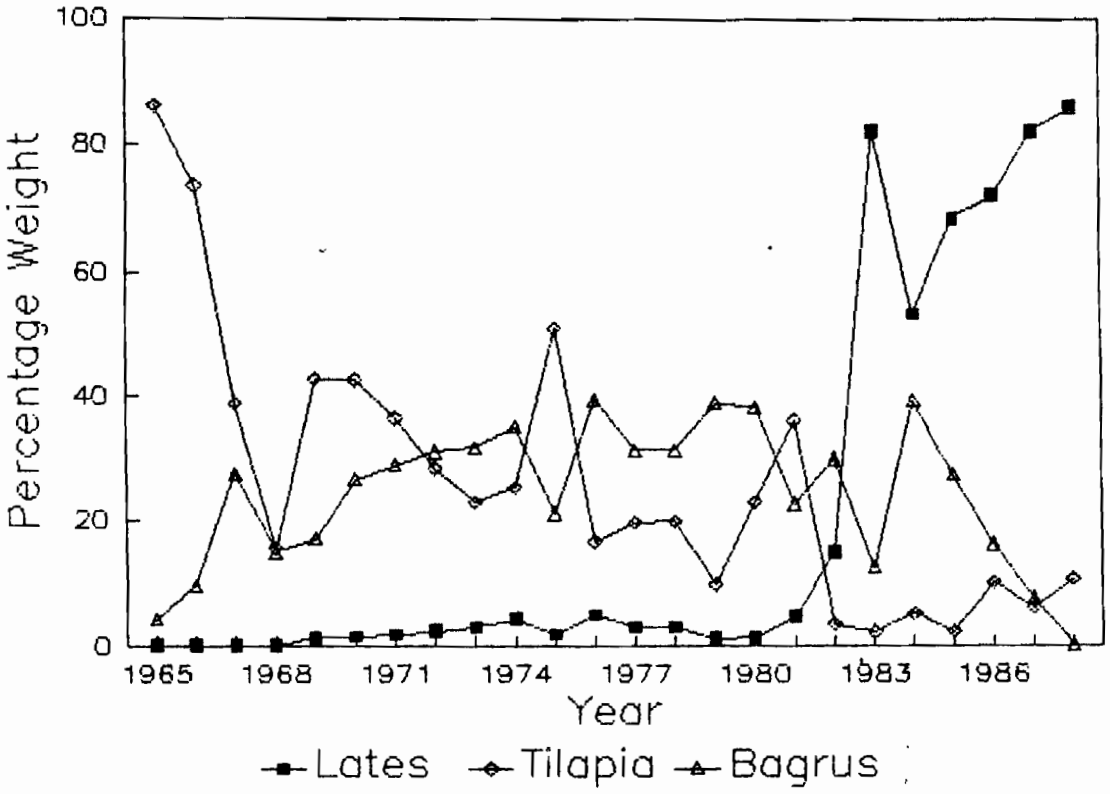

Figure 3. Percentage Weight distribution of Protopterus, Clarias and Haplochromis in Lake Victoria catches (1965-1988)

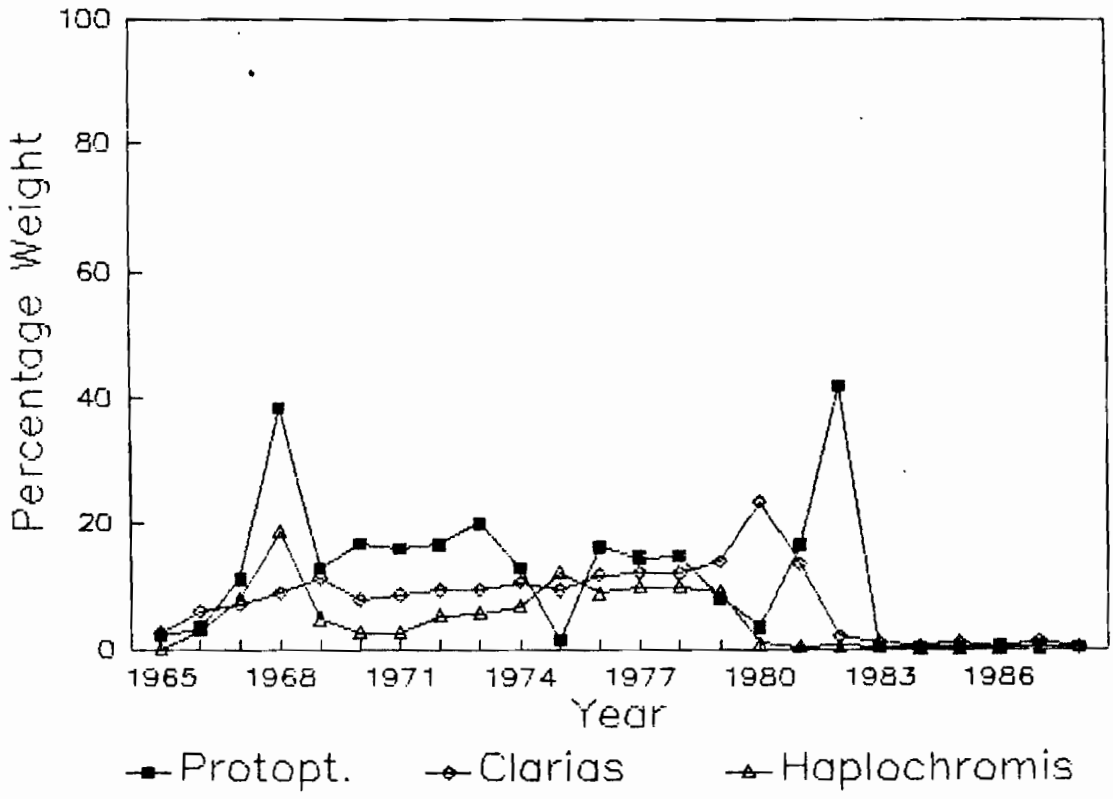

Figure 4. Percentage Weight distribution of Lates, Tilapia and Bagrus in Lake Albert catches (1965-1988)

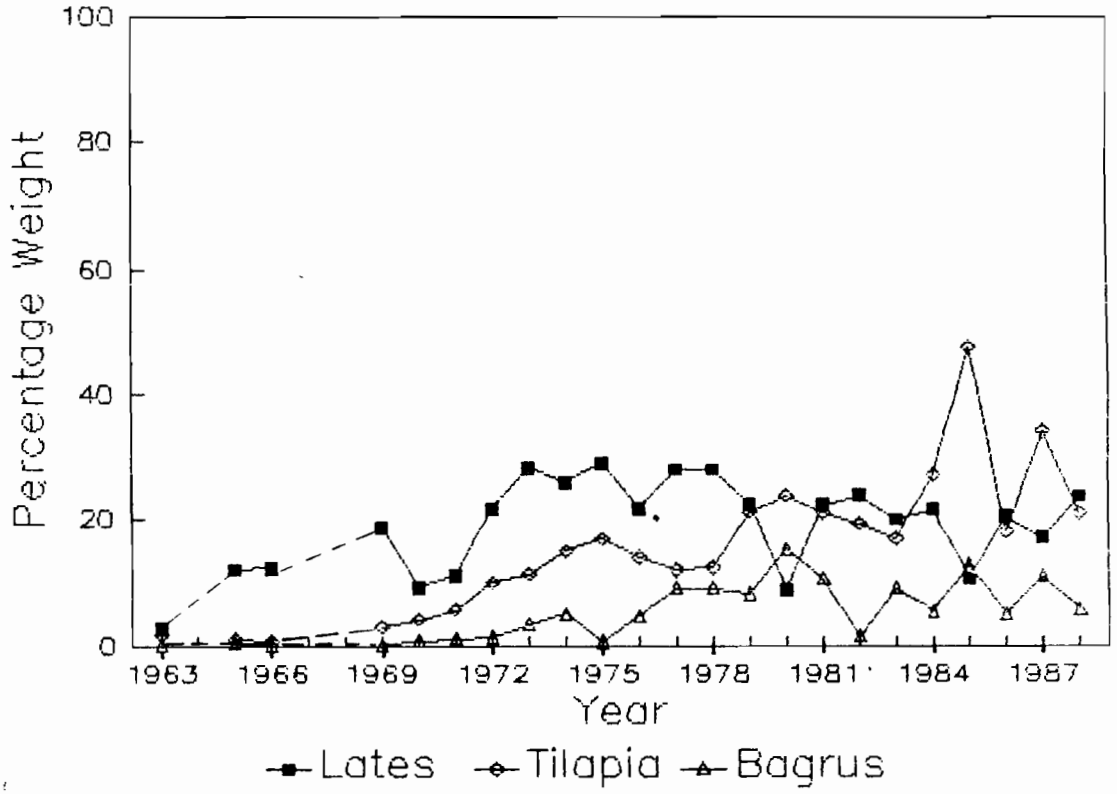

Figure 5. Percentage Weight distribution of Alestes, Hydrocynus and Distichodus in Lake Albert catches (1965-1988)

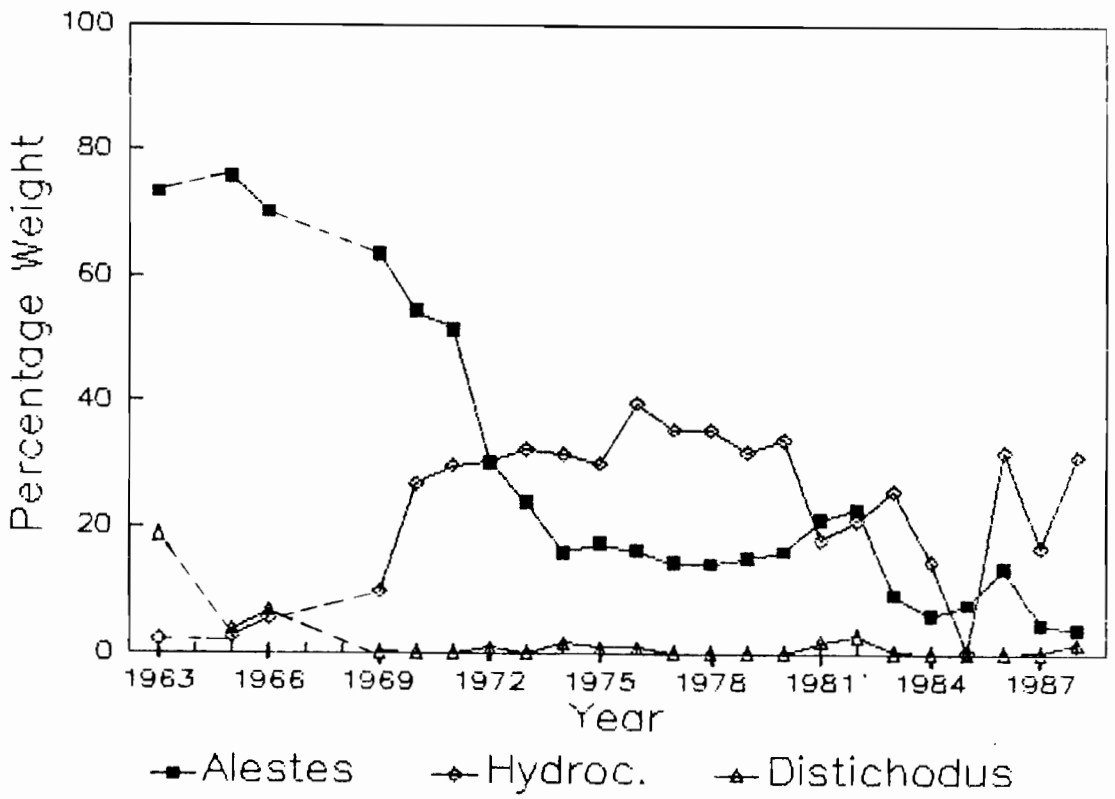

Figure 6. Percentage Weight distribution of Bagrus, Barbus, Clarias and Protopterus in Lakes George and Edward catches (1965-1988)